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Psychopathy and Impulsivity: The relationship of psychopathy to different aspects of UPPS-P  
impulsivity

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## Abstract

Impulsivity is thought to be a major component of psychopathy. However, impulsivity is a multi-faceted concept, and different facets may have differential relationships to psychopathy. We measured impulsivity via the UPPS-P in a sample of prisoners and in patients in a personality disorder service resident in secure psychiatric care. Psychopathy in the prison sample was measured via the clinician-rated Psychopathy Checklist: Screening Version and in the patients via the Psychopathy Checklist-Revised. We found that the Lifestyle/Antisocial factor (Factor 2) was associated with acting rashly when emotional (Negative Urgency and Positive Urgency). However, the Interpersonal/Affective factor (Factor 1) was associated with *reduced* impulsivity in the domains of premeditation and perseverance, and its unique variance was also associated with less rash behavior. The Interpersonal facet (Facet 1) was particularly associated with reduced impulsivity. The results show that individuals with high Interpersonal traits of psychopathy can plan carefully and are persistent in their goals. This may underpin instrumental violence and criminal behavior. Thus, a simple unitary understanding of the relationship between psychopathy and impulsivity may not be valid and may distort the multifaceted relationship between the two concepts that could assist in the assessment and management of psychopathic offenders.

*Keywords:* psychopathy, Psychopathy Checklist-Revised (PCL-R), Psychopathy Checklist: Screening Version (PCL: SV), impulsivity, UPPS.

## Psychopathy and Impulsivity: The relationship of psychopathy to different aspects of UPPS-P impulsivity

### 1. Introduction

The concept that psychopathic offenders are impulsive has a long clinical tradition (Cleckley, 1941), but more recent work has suggested that a more nuanced position is needed (Poythress and Hall, 2011). A number of studies (Berg et al., 2015a; Miller et al., 2011; Poythress and Hall, 2011; Ray et al., 2009; Snowden and Gray, 2011) have shown that the definition of impulsivity and how it is measured (e.g., which task/questionnaire is used) determine the nature of the associations found between psychopathy and impulsivity. These studies have further identified that different aspects of psychopathy may actually be related to *reduced* impulsivity rather than raised impulsivity as per the accepted view. Indeed, the actions, including criminal and antisocial behaviors, of some psychopathic individuals appear carefully planned and acted out in a cold-blooded or instrumental manner, rather than poorly conceived, reckless, and rash in nature (Cima and Raine, 2009). A greater understanding of the multi-faceted and complex inter-relationships between impulsivity and psychopathy is, therefore, important in developing improved understanding and management of offenders in both prison and forensic psychiatric settings.

Impulsivity is a multifactorial construct that aims to explain behavior that appears poorly conceived, prematurely expressed, unduly risky, inappropriate to the situation, or that often results in undesirable consequences (Dougherty et al., 2005; Enticott and Ogloff, 2006; Evenden, 1999; Morgan et al., 2011; Sharma et al., 2014). However, how impulsivity is conceptualized is highly dependent on the behavioral task or self-report instrument used (see Sharma et al., 2013) and ongoing work is investigating the utility of combining self-report, behavioral tasks, and neural indicators of impulsivity (Venables et al., 2018).

The development of the UPPS-P (Lynam et al., 2006b; Whiteside and Lynam, 2001) followed a similar integrative approach, by using factor analyses to combine ten different impulsivity inventories into one self-report instrument. The final UPPS-P allows for the measure of five forms, or types, of “impulsivity”. Perhaps the most accepted definition of impulsivity is a lack of planning, or the lack of thinking about the future or the consequences of one’s behavior prior to acting, and this is captured in the UPPS-P via the Lack of Premeditation scale. Impulsivity has also been described as the inability to stick to tasks that are boring or difficult, or the inability to resist distraction from other stimuli, and these concepts are captured via the Lack of Perseverance scale. Sensation Seeking describes a desire for novel, intense, and exciting situations or activities and a willingness to take risks in order to achieve sufficient stimulation or excitement. Finally, the original UPPS had a scale of Urgency, which describes the urge to act due to intense emotional states. This scale was later refined to consider the separate evaluation of both Negative Urgency (reacting rashly when distressed – see Settles et al., 2012), and Positive Urgency (a tendency to lose control over behavior when exhilarated or happy - see Cyders and Smith, 2008).

A commonly recurring theme in the research literature on psychopathy is the notion that there may be different forms, sub-groups, or dimensions of psychopathy, such as a distinction between primary and secondary psychopathy (Karpman, 1941; Mokros et al., 2015; Yildirim and Derksen, 2015). Most current schemes for the measurement of psychopathy also contain sub-scales that separate the global construct of psychopathy into sub-factors (e.g., Psychopathy Checklist –Revised, PCL-R, Hare, 1991; Psychopathic Personality Inventory-Revised, PPI-R, Lilienfeld and Fowler, 2006; Self-Report Psychopathy, 4<sup>th</sup> Edition, Paulhus et al., 2016; Levenson Self-Report Psychopathy Scale, LSRP, Levenson et al., 1995; Triarchic Psychopathy Measure, TriPM, Patrick and Drislane,

2015). However, at present there is much debate about what the central components of psychopathy should be (e.g., Lilienfeld et al., 2015).

Some measures of psychopathy, notably the PPI-R and the TriPM, have a subscale that measures a fearless/boldness dimension that could well function as an adaptive trait when in the right settings (Lilienfeld et al., 2012a). However, whether such traits should be included in the concept of psychopathy has attracted much discussion and controversy, with some (Miller and Lynam, 2012) arguing that these traits show a pattern of correlation that is inconsistent with many conceptualisations of psychopathy. It has also been argued that the traits of boldness/fearlessness may be irrelevant to the concept of psychopathy (e.g., Neumann et al., 2013). Others have argued that this is not the case and that boldness/fearlessness is associated with well-validated psychopathy measures (Lilienfeld et al., 2012b; Lilienfeld et al., 2016). When considering the concept of boldness/fearlessness with regard to the UPPS-P, one might expect that this aspect of psychopathy would be negatively associated with Negative Urgency. Individuals scoring high on measures of boldness/fearlessness appear to have immunity to stress and emotional resilience and, therefore, would not be expected to act rashly when under (negative) emotions. Recent evidence has supported this hypothesis. Weidacker et al. (2017a) show that the TriPM scale of Boldness was negatively correlated to Negative Urgency, while the other scales (Meanness and Disinhibition) were positively correlated to Negative Urgency.

In the clinical domain psychopathy is usually determined via the Psychopathy Checklist-Revised (PCL-R; Hare, 1991) – a clinician-based assessment that relies on a careful evaluation of collateral information as well as upon clinical interview. Alongside a global psychopathy score, the PCL-R also provides scores on two well-validated sub-scales (Harpur et al., 1989). The Interpersonal/Affective factor of psychopathy (termed Factor 1) measures callous and manipulative traits, and a lack of empathy and emotions. The

Lifestyle/Antisocial factor (Factor 2) measures impulsive, irresponsible, and antisocial behaviors.

Several studies have already explored the relationship between psychopathy and the varieties of impulsivity as measured or defined by the UPPS(-P) (Anestis et al., 2009; Berg et al., 2015b; Miller et al., 2011; Poythress and Hall, 2011; Ray et al., 2009; Weidacker et al., 2017a). The results from this research are summarised in Table 1. The data appear to have some consistencies. For example, Negative Urgency appears to be related to the lifestyle and antisocial traits of psychopathy (Self-Centred Impulsivity of PPI-R, Secondary Psychopathy scale of LSRPS; Factor 2 of SRP-III), but not to the interpersonal and affective traits (Fearless Dominance of PPI-R, Primary Psychopathy scale of LSRPS; Factor 1 of SRP-III). Studies of Positive Urgency are rare, but those that exist also appear to link Positive Urgency to the lifestyle and antisocial traits of psychopathy. All studies also agree that a Lack of Planning and a Lack of Perseverance is associated with lifestyle and antisocial traits. The data relating to Sensation Seeking is far less consistent. Some studies (Berg et al., 2015; Ray et al., 2009) show a very strong relationship to interpersonal and affective traits of psychopathy while other studies show a far weaker relationship (e.g., Miller et al., 2011).

Most of these results of the relationship between psychopathy and UPPS used self-report questionnaires and were obtained from community (mainly undergraduate) samples, (the exception being Ray et al., 2009). This raises the question of whether the findings of these studies generalize to criminal or forensic psychiatric samples. In these criminal and forensic settings psychopathy as a clinical disorder is more prevalent, is likely to be an important issue that requires assessment and management, and the use of self-report questionnaires, at least for clinical decision-making, is problematic (Lilienfeld and Fowler, 2006).

There has only been one direct study of UPPS impulsivity and its relationship to psychopathy as measured by the PCL-R. This is surprising given the eminence of the PCL-R as a measure of psychopathy (Hare, 2016). Varlamov et al. (2011) found that global psychopathy was only related to higher Sensation Seeking scores. Unfortunately, this study did not consider any relationships of the UPPS to the factors or facets of psychopathy.

Poythress and Hall (2011) have reviewed other self-report measures of impulsivity that bear close resemblance to the scales of the UPPS, and investigated their relationships to the PCL-R factors (results also shown in Table 1). They found that most aspects of impulsivity (they did not differentiate between positive and negative urgency) were related to the Lifestyle/Antisocial factor of the PCL-R, however, only the Lack of Planning and a Lack of Perseverance findings appeared consistent across studies. Poythress and Hall's (2011) review found that the Interpersonal/Affective factor was not significantly associated with any of the measures of impulsivity.

Given the lack of any direct data relating the Interpersonal/Affective and Lifestyle/Antisocial factors of the PCL-R to the UPPS-P, and the importance of impulsivity in terms of the concept of psychopathy, we have measured psychopathy using the clinically-rated PCL-R or its shorter screening version (PCL:SV; Hart et al., 1995), and self-reported impulsivity using the UPPS-P. Based on previous data (e.g., Poythress and Hall, 2011) we predicted that the Lifestyle/Antisocial factor would be associated with a Lack of Planning and a Lack of Perseverance, while the Interpersonal/Affective factor would not be associated with any form of impulsivity.

As well as presenting data from the two-factor model of the PCL-R (and PCL:SV), we also examined the data at the level of the four-facet model of psychopathy (Hare, 2003) which divides the Interpersonal/Affective factor into the separate components of Interpersonal (Facet 1), and Affective (Facet 2), and the Lifestyle/Antisocial factor into the



separate components of Lifestyle (Facet 3) and Antisocial (Facet 4). To date, there has been no published data relating to varieties of impulsivity and the four facets. Based on the descriptions of the facets (Hare, 2003) we might expect both Facet 3 (Lifestyle) and Facet 4 (Antisocial) to be related to impulsive behaviors. Facet 2 (Affective) does not appear to describe individuals with abnormal levels of impulsivity and so we did not predict any associations to this facet. On the other hand, Facet 1 (Interpersonal) describes traits such as glibness, pathological lying and an ability to con and manipulate others that might need the ability to remain calm and focussed on the task at hand, and not to become stressed or reckless when under pressure. Hence, there is the possibility that high Facet 1 (Interpersonal) traits might be associated with reduced levels of impulsivity given the modest correlations between the Interpersonal facet of the PCL-R and the Boldness scale of the TriPM (Venables et al., 2014) and that Boldness has been shown to be negatively associated with Negative Urgency (Weidacker et al, 2017a).

## **2. Methods**

### *2.1. Experimental Design and Power Analysis*

There is strong evidence that psychopathy should be treated as a dimension rather than a taxon, and this applies to both the PCL-R (Edens et al., 2006) and the PCL:SV (Walters et al., 2007). Hence, we chose to analyse the data using correlation and regression rather than forming discrete groups (MacCallum et al., 2002). Based on the aim of being able to detect medium effects ( $r = 0.30$ ) using standard conditions ( $\alpha$  (two-tailed) = 0.05;  $\beta = 0.20$ ) a power calculation showed we required a sample of  $N = 85$  to detect significant effects (Hulley et al., 2013).

### *2.2. Participants*

#### *2.2.1 Patient sample*

Data for 19 male psychiatric patients were taken from an anonymised database of patients admitted to a low-security psychiatric hospital in South Wales, UK (Ty Catrin). The mean age of this sample was 36.9 years ( $SD = 13.2$ ). Most patients described themselves as White British (95%) with one describing himself as “mixed-race” (5%).

Most of the sample had a long and varied criminal history. The mean number of previous convictions was 60.7 ( $SD = 70.5$ ), with a mean of 11.0 violent convictions ( $SD = 14.8$ ). The age of first conviction varied between 13 and 39 years ( $M = 19.2$ ,  $SD = 8.2$ ).

The hospital specialised in the treatment of patients with a personality disorder. Hence, all patients either had a diagnosis of a personality disorder or were being assessed for the presence of a personality disorder. Of the patients with a confirmed diagnosis, 53% had a diagnosis of antisocial personality disorder, 17% dependent personality disorder, 11% paranoid personality disorder, 11% borderline personality disorder, and 11% personality disorder NOS (some patients have more than one diagnosed personality disorder). One patient also had a co-morbid diagnosis of generalised anxiety disorder. Most (57%) of the patients were admitted on a Section 37/41 order (being sent to hospital for treatment rather than prison following a Court Order) with 32% being admitted under Section 3 (being detained for their own health and safety, or that of the public, in order to receive treatment) and 11% under other sections of the Mental Health Act (1983).

All patients entering the hospital were assessed on a battery of tests, determined by their clinical team, which included the PCL-R and the UPPS-P. Permission to use an anonymised version of the clinical database for research was granted by the National Health Service Research Ethics Committee (14/EM/1178).

### *2.2.2 Prison sample*

Sixty eight participants were recruited from the category-C prison HMP Channings Wood in South West England. The mean age of this sample was 41.4 years ( $SD = 14.1$ ).

which did not differ significantly from the patient sample,  $t(85) = 1.29$ ,  $p = 0.20$ .

Ninety percent described themselves as White British, 5% as Caribbean and the remaining participants described themselves as Asian or Pakistani (1.5% each).

The mean number of previous convictions was 8.6 ( $SD = 11.4$ ). The index offence was classified as violent in 48.5% of the sample. The age of first conviction varied between 11 and 65 years ( $M = 23.9$ ,  $SD = 12.2$ ).

Ethical approval for the offender sample was obtained from Swansea University Department of Psychology Ethical Committee as well as from the National Offender Management System. Full written informed consent was given prior to study participation by all participants.

### 2.3. Materials and Procedure

**2.3.1 The UPPS-P Impulsive Behavior Scale.** The UPPS-P (Lynam et al., 2006b) is a 59-item self-report questionnaire scored on a four-point Likert scale, ranging from “*agree strongly*” to “*disagree strongly*”. The UPPS-P does not provide a total score of impulsivity. Instead, impulsivity is subdivided into five sub-scales of Negative Urgency, Positive Urgency, Lack of Premeditation, Lack of Perseverance, and Sensation Seeking. The internal consistency for the prison sample was good to high ( $\alpha = 0.82$  to  $0.92$ ). For the patient sample, the clinical database only contained data relating to the scale scores (no item scores) so no measure of internal consistency could be calculated.

**2.3.2 The Psychopathy Checklist: Screening Version.** The PCL:SV (Hart et al., 1995) contains 12 items relating to specific aspects of the psychopathic personality, which were assessed on a three-point scale (0= “*clearly absent*”, 1= “*possibly present*”, 2= “*present*”) based on file review and collateral information from wing officers and treatment programme staff. The PCL:SV was rated by trained graduate or doctoral level raters whose

individual reliabilities had been checked via the Darkstone program<sup>1</sup> of PCL-R training prior to the completion of this study (ICCs > 0.75). As well as a total score, the PCL:SV can also produce scores for Factor 1 (Interpersonal/Affective factor) and Factor 2 (Lifestyle/Antisocial factor), which are referred to as Parts 1 and 2 in the PCL:SV manual. The PCL:SV is also thought to be underpinned by a four-facet model (Hill et al., 2004) and so we also assigned the appropriate items to this four-facet model.

The current assessment resulted in acceptable values for internal consistency for the PCL:SV total score ( $\alpha = 0.81$ ), and its two factors of Interpersonal/Affective ( $\alpha = 0.79$ ) and Lifestyle/Antisocial ( $\alpha = 0.84$ ). However, the reliabilities of the facets scores were somewhat lower: Interpersonal,  $\alpha = 0.70$ ; Affective,  $\alpha = 0.70$ ; Lifestyle,  $\alpha = 0.84$ ; Antisocial  $\alpha = 0.66$ .

**2.3.3 The Psychopathy Checklist-Revised.** The PCL-R (Hare, 1991) contains 20 items relating to specific aspects of the psychopathy personality, which were assessed on a three-point scale (0= “*clearly absent*”, 1= “*possibly present*”, 2= “*present*”). The PCL-R was completed by clinicians (trained via the Darkstone training program) within the hospital using both file information, clinical interviews with the patient, and information from collateral sources (e.g., staff within the hospital).

There are many reports as to the high internal consistency of the PCL-R instrument (see Hare, 2003) and in the present sample there was good internal consistency for the total PCL-R score ( $\alpha = 0.79$ ), and for the Interpersonal/Affective factor ( $\alpha = 0.81$ ), but only moderate consistency the Lifestyle/Antisocial factor ( $\alpha = 0.51$ ). At the facet level, the reliabilities were: Interpersonal,  $\alpha = 0.78$ ; Affective,  $\alpha = 0.78$ ; Lifestyle,  $\alpha = 0.47$ ; Antisocial,  $\alpha = 0.68$ .

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<sup>1</sup> The Darkstone program involves the rater scoring PCL-Rs using file information and videos of eight inmates (two training cases and six test cases), and these scores being compared to “gold-standard” PCL-R scores from highly experienced raters.

#### 2.4. Data Analysis

Although the PCL-R and the PCL:SV were designed to measure the same construct, and there is ample evidence for success in this endeavour (Cooke et al., 1999; Guy and Douglas, 2006; Neumann and Hare, 2008), they contain differing number of items (20 and 12 respectively for total score, 8 vs 6 for the Interpersonal/Affective factor, 10 vs 6 for the Lifestyle/Antisocial factor, 4 vs 3 for Interpersonal and Affective, and 5 vs 3 for Lifestyle and Antisocial facets). Thus, the scales differ on maximum potential scores. In order to equate the two instruments we re-scaled the total PCL:SV scores by a factor of 1.67 for the total score, by 1.33 for Factor 1, 1.67 for Factor 2, by 1.33 for Facets 1 and 2, and by 1.67 for Facets 3 and 4. To acknowledge the combination of PCL-R and PCL:SV scores, we use the term “psychopathy-score” to refer to the combined psychopathy measure.

Normality of distribution of scores was assessed by means of Q-Q plots and visual inspection. The data did not differ greatly from a normal distribution for any of the scales. Relationships between scales were therefore examined via zero-order correlations, first-order correlations, and semi-partial correlations in regression analyses. However, formal tests of normality (e.g., Shapiro-Wilk) showed some of the psychopathy-scores were positively skewed. Hence, we also ran the analyses using a square-root transformation ( $X_{\text{new}} = \sqrt{X_{\text{old}} + 1}$ ), and also using non-parametric tests. The results from all tests were highly similar with no changes in level of significance for any association. Thus, we have only reported the parametric untransformed, statistical analyses.

### 3. Results

Means and standard deviations of the psychopathy-scores and UPPS-P scores for the total sample and for the two subsamples are given in Table 2. While the UPPS-P scores were not significantly different between samples, a few significant differences emerged regarding the psychopathy-scores. The patient sample had a higher total psychology-score,  $t(85) = 3.04$ ,

$p = .003$ ), a higher Interpersonal/Affective factor score,  $t(85) = 2.94$ ,  $p = .004$ ), and a higher Affective facet score,  $t(85) = 3.05$ ,  $p = .003$ ). This most probably reflects their detention in a specialist unit dedicated to the assessment of treatment of personality disordered offenders.

The correlations between the factors and facets of the psychopathy assessments are in the Supplementary materials (see Table S1). The correlations between the scales scores of the UPPS-P are also available in these Supplementary materials (See Table S2).

### *3.1 Main Analysis.*

The zero-order correlations between the psychopathy-scores and the UPPS scores are shown in Table 3. For the total psychopathy-score no individual correlation reached statistical significance.

At the factor level, the Lifestyle/Antisocial factor was positively correlated with both Negative and Positive Urgency. The Interpersonal/Affective factor, however, showed significant negative correlations to Lack of Premeditation and Lack of Perseverance (in other words scores on the Interpersonal/Affective factor of psychopathy were associated with greater premeditation and greater perseverance).

The data from the facet level analysis are also shown in Table 3. We focused on whether the two facets associated with each factor produced different patterns of results. For the two facets of the Interpersonal/Affective factor, the Interpersonal facet produced significant (negative) correlations with Negative Urgency, Lack of Premeditation and Lack of Perseverance, but the Affective facet was not significantly associated with any UPPS-P scale. For the two facets of the Lifestyle/Antisocial factor, the Lifestyle facet produced significant (positive) correlations with Negative Urgency, Positive Urgency and Sensation Seeking, while the Antisocial facet was only significantly correlated with Positive Urgency.

We also examined the pattern of results across the two samples separately. Overall, the pattern of results was highly similar and no statistical differences between any of the

correlations emerged. However, we acknowledge that this exploratory analysis has low power due the small number of participants in the patient group. The full set of correlations can be found in the Supplementary materials (See Table S3).

### *3.2 Regression Analyses.*

To account for the overlap between the Interpersonal/Affective and Lifestyle/Antisocial factor scores ( $r = 0.28, p = 0.009$ ), the two factors were regressed (simultaneously) onto each of the UPPS-P impulsivity factors in turn. We also calculated the semi-partial correlations in order to see each factor's unique variance in relation to UPPS-P scores. The results are shown in Table 4. As with the zero-order correlations, the two factors had quite different relationships with each measure of the UPPS-P. The Interpersonal/Affective factor had significant negative associations with Negative Urgency, Lack of Premeditation, and Lack of Perseverance. In contrast, the Lifestyle/Antisocial factor showed significant positive associations to Negative and Positive Urgency, Lack of Premeditation, and Lack of Perseverance.

A similar regression was completed using the facet scores and is shown in Table 5. Facet 1 (Interpersonal) was negatively associated with Negative Urgency, Lack of Premeditation, and Lack of Perseverance, while Facet 2 (Affective) showed no significant effects. Facet 3 (Lifestyle) was positively associated with both Negative and Positive Urgency, Lack of Premeditation, and Lack of Perseverance. There were no significant associations with Facet 4 (Antisocial).

## **4. Discussion**

Based on previous data (Poythress and Hall, 2011), we hypothesised that the Lifestyle/Antisocial factor would be associated with a Lack of Premeditation and a Lack of Perseverance, while the Interpersonal/Affective factor would not be associated with any form of impulsivity. Our results did not support this pattern. The Lifestyle/Antisocial factor was

significantly associated with both Negative and Positive Urgency while the Interpersonal/Affective factor was negatively associated with a Lack of Premeditation and a Lack of Perseverance.

The two factors of the PCL showed a very different pattern of relationship to the different varieties of impulsivity measured by the UPPS-P that were, in some instances, in opposite directions. Hence, an analysis of the total psychopathy-score (where the Interpersonal/Affective and Lifestyle/Antisocial factors were combined) showed little overall relationship to the UPPS-P types of impulsivity as the effects of each factor served to cancel each other out.

#### *4.2. Comparison to previous studies.*

Perhaps the most important result within this present study was that certain aspects of psychopathy are associated with *reduced* impulsivity in the domains of planning/premeditation and perseverance. The data from previous studies (see Table 1) shows little supportive evidence for this notion of reduced impulsivity. However, we note that our results here pertain only to the Interpersonal/Affective (Factor 1) components of psychopathy. Hence, we might only expect to find such reduced impulsivity for scales that also measure the Interpersonal/Affective component of psychopathy. We note that there are some indications of a reduced impulsivity (at least for the Lack of Perseverance scale) for the Fearless Dominance scale of the PPI-R (though not statistically significant) in the study of offenders by Ray et al. (2009) and for the Boldness scale of the TriPM in a mixed sample of offenders and community participants (Weidacker et al., 2017a). However, direct comparisons with these scales, and other scales of psychopathy, to the factors of the PCL-R and PCL:SV are not possible due to the rather low correlation between these measures (Malterer et al., 2010; Copestake et al., 2011, Venables et al., 2014). Further studies using a self-report measure that also purports to measure the same concepts as the PCL-R, such as the



SRP4 (Paulhus et al., 2016) would be of value, though we note that even this measure has only modest correlations between the facets as defined by the SRP4 and the PCL-R (0.36 – 0.77 see Paulhus et al. 2016 Table 5.11).

It must also be noted that the present study differs from these previous studies in that we used a clinician-rated measure of psychopathy rather than a self-report measure. Hence, the correlations between the scales of psychopathy and those of impulsivity may have been inflated by common-method variance (sometimes termed common-method bias: Podsakoff et al., 2003). Hence, any possible negative correlations might have been masked due to positive correlations produced by common-method bias.

Poythress and Hall (2011) tried to relate the two factors of the PCL-R to different aspects of impulsivity. However, they did not use the UPPS-P and attempted to approximate the UPPS scales by the use of other scales. For example, in the domain of Lack of Perseverance, their analysis is based on only two studies (Harpur et al., 1989; Hall et al., 2004) and they chose to represent the Lack of Perseverance concept by the Boredom Susceptibility and the Disinhibition Scales of the Sensation Seeking Scale (Zuckerman, 1979). Therefore, it is not clear that these findings are in conflict with our current findings.

#### *4.1.Factor 1: Interpersonal/Affective*

Perhaps the most important result within this present study was that certain aspects of psychopathy are associated with *reduced* impulsivity rather than increased impulsivity. In particular, we found that high Interpersonal/Affective factor scores were associated with greater ability to plan for the future (Lack of Premeditation) and greater ability to persist at a task even if this task is boring or difficult (Lack of Perseverance). At a more fine-grained facet-based analysis, the results were driven mainly by the Interpersonal traits (Facet 1) than the Affective traits (Facet 2). These findings are novel as, to our knowledge, no previous study has found a negative association between these scales on the UPPS and PCL

Interpersonal/Affective factor (see Table 1). Poythress and Hall (2011) found no such negative relationship with the Interpersonal/Affective factor of the PCL-R and Premeditation and Perseverance using their derived versions of these impulsivity scales, rather than directly using the UPPS. We also found some evidence that the unique variance of the Interpersonal/Affective factor was associated with a reduction in rash or reckless action when experiencing negative emotion (Negative Urgency).

Lack of planning (or premeditation) has traditionally been measured within the laboratory via tasks that offer a smaller but immediate reward versus a larger but delayed reward (e.g. delay-discounting - Ainslie, 1974). Interestingly, patients with damage to the amygdala or to the orbital frontal cortex show poor decision-making and are often described as impulsive (Gopal et al., 2013; Tajima-Pozo et al., 2015). These same brain regions are also thought to be involved in the mediation and aetiology of psychopathic traits (Stratton et al., 2015). Further, Winstanley et al. (2004) suggest that these brain areas may have somewhat different effects, such that damage to the amygdala produces greater delay-discounting (i.e., greater impulsivity) whereas damage to the orbital frontal cortex may result in less delay-discounting (i.e., less impulsivity). This latter finding of less discounting seems in line with the current suggestion that the Interpersonal/Affective factor (and the Interpersonal facet) is associated with a strong ability to consider the future and may provide a laboratory test for this ability. However, direct measurements of delay-discounting in those with high levels of psychopathy are sparse. Morgan et al. (2011) show that, in a community sample, higher levels of secondary psychopathy (measured via the Self-Centred Impulsivity scale of the PPI-R) are related to greater impulsivity on this task, while Fearless Dominance did not express a significant relationship to the delay-discounting task.

An alternate, but similar, way to consider “Lack of planning” is for people to be unable to withhold a pre-potent response. The classic laboratory task to examine this is the

go/nogo paradigm where the participant is trained to respond to a particular target (e.g., a blue circle), but must withhold their response to targets that are similar, but not the same (e.g., a blue square), later in the task. Recently, Weidacker et al. (2017b) showed that response inhibition in a parametric version of this task was greater for participants with high, compared to low, Interpersonal facet scores and suggest that these individuals have greater control over their impulses for certain behaviors.

Measurement of persistence has a long-tradition in psychology (Ryans, 1939). However, there are no well-established behavioral tests of this psychological construct in the sense we use it here (as an adaptation to keep persisting on a task) and no data relating this ability to the concept of psychopathy. Current tests that measure perseverance, such as the Wisconsin Card Sorting Task (Berg, 1948) or Brixton Task (Burgess and Shallice, 1996), look at the continued response of a previously learnt response when this is no longer the correct (or adaptive) response (perseveration). Evidence from such tasks appears to show no deficit related to psychopathy in perseveration of response (Lapierre et al., 1995; Ishikawa et al., 2001; Bagshaw et al., 2014). One, possibly related, theory is that psychopathy is characterised by a strong task-focus. The response modulation hypothesis suggests that once a psychopath's attentional focus is engaged, this focus becomes unduly narrow and that other events that would be processed by non-psychopathic individuals are missed by psychopathic individuals (Newman, 1988). Such an individual might seem to be very persistent in that they are not easily distracted from their goal. One can see how such persistence could easily lead to maladaptive, or risk-related, behavior if the goal was an antisocial one, or related to behavior that attracted punishment or social sanction. Clearly, these are ideas that need future exploration and synthesis to test these hypothesised associations.

The picture, therefore, emerges of a person with high Interpersonal/Affective factor or high Interpersonal facet scores that is less impulsive. Instead, they have good ability to plan

and are able to stick at a task in order to achieve their goals. They may also be less affected by emotions. These traits may well have a beneficial or positive influence on behavior and success in life (e.g. the concept of the “successful” psychopaths; Gao and Raine, 2010), but, if combined with more antisocial traits or a tendency to rule-breaking, may lead to an unemotional and remorseless person who can commit antisocial acts instrumentally with carefully thought-through plans and dogged persistence.

#### *4.2. Factor 2: Lifestyle/Antisocial*

We found that the Lifestyle/Antisocial factor was related positively to most types of UPPS-P impulsivity, and that both the Lifestyle and Antisocial facets produce broadly similar results. This is in broad agreement with other studies that have tried to isolate the lifestyle and antisocial traits of psychopathy (see Table 1).

In our study, the Lifestyle/Antisocial factor was strongly associated to the two scales of urgency (Negative Urgency and Positive Urgency). Negative Urgency is the taking of rash, or reckless, action when under the influence of strong negative emotions. It has been found to be strongly associated with a range of externalising behaviors (Settles et al., 2012). Positive Urgency is the taking of rash action when under the influence of strong positive emotion. It is strongly associated with problem behaviors such as binge drinking, drug use, and risky sexual behavior (Cyders and Smith, 2008; Zapolski et al., 2009).

Recent two-process theories of psychopathy (Yildirim and Derksen, 2015) have emphasised the processing of emotional material to be part of both processes. So-called primary psychopathy is associated with an emotional deficiency and an reduced ability to experience emotion, whereas secondary psychopathy is associated with an emotional dysfunction such that there is poor appraisal of emotional stimuli, and poor regulation of emotion (and, therefore, resultant affective and behavioral dysregulation). The present results seem in accord with this notion of two separate aetiological mechanisms, with the

Lifestyle/Antisocial factor being associated with increases in self-reported rash action when the person becomes negatively or positively emotionally aroused.

#### *4.3. Limitations*

The present study has several limitations. First, the study was designed to be sufficiently powered to measure “medium” effect sizes. While clearly the study was able to provide strong evidence for different patterns of association between the two factors and four facets of the psychopathy-score with respect to UPPS-P impulsivity, other smaller associations may have not been detected. We argue that the present novel and highly interesting pattern of results calls for a larger scale replication in prison and forensic psychiatric offender populations.

Second, some of our significant effects only occurred within the regression analyses and were not present for the zero-order correlations. It should be remembered that these results only apply to the residualized scale and should not be applied to the original scale (Lynam et al., 2006a).

Third, the reliability estimates for some facets of the psychopathy measures (the Lifestyle and Antisocial facets of the PLC-R and the Antisocial facet of the PCL:SV) were below satisfactory levels ( $< 0.70$ ). Previous research has also shown that the Lifestyle and Antisocial facets of the PCL-R have lower reliabilities than the factors or the other two facets of the PCL-R (see Hare, 2003; Table 5.8) perhaps reflecting the more heterogeneous nature of the items on these scales.

Fourth, our findings in relation to the different aspects of impulsivity measured by the UPPS-P are confined to self-report. Previous research has shown that the overlap between self-reported impulsivity levels and experimental paradigms intended to measure impulsive behaviour is limited (e.g., Cyders and Coskunpinar, 2011; Sharma et al., 2013). Whether this limited consistency is due to self-report measures and experimental tasks measuring different

constructs of impulsivity, or due to style of test taking, remains unclear (see Cyders and Coskunpinar, 2011 for a discussion). Therefore, there is a pressing need for the development of behavioral measures of these concepts that can complement self-report measures. Such developments would aid the clinician to evaluate the presence of dysfunction in these behaviors (especially in offender populations where insight might be lacking or where dissimulation may be prevalent). They would also assist researchers to investigate the aetiology and mechanism of these difficulties and their possible alleviation via therapeutic or pharmacological intervention.

Fifth, whether the UPPS-P captures five separable processes has been questioned (Berg et al., 2015). In their meta-analysis, Berg et al. noted that there were substantial similarities in the pattern of results for the Negative and Positive Urgency scales, and for the Lack of Premeditation and Lack of Persistence scales. In the present study the Negative and Positive Urgency scales showed a strong correlation ( $r = 0.57$ ), as did the Lack of Premeditation and Lack of Persistence scales ( $r = 0.59$ ) (see Supplementary Materials Table S2) with each pair showing very similar correlations with the psychopathy-scores. Hence, future research might examine whether these four concepts may be better considered as just two concepts.

#### *4.4. Conclusions*

We found that the Interpersonal/Affective factor and the Lifestyle/Antisocial factor of psychopathy to have very different relationships to different sub-scales of impulsivity as measured by the UPPS-P. The Lifestyle/Antisocial factor was associated with rash action in the face of emotional states (both positive and negative urgency), but also to a tendency not to consider the consequences of actions, nor to see behavior through to a conclusion. In contrast, the Interpersonal/Affective factor of psychopathy was related more to an ability to plan for the future and to an enhanced ability to persevere at one's behavior in the face of

negative feedback or lack of reward (or perhaps to persevere), and an ability to not show reckless behavior when in an emotional state (possibly because of a paucity of emotion in the first place). Hence, high scorers on the Interpersonal/Affective factor and the Lifestyle/Antisocial factor almost appear to be the mirror-image of each other on these indices of impulsive behavior. Far from being impulsive, our results suggest that people with high scores on the Interpersonal/Affective factor, and high Interpersonal facet scores in particular, may be particularly good at planning, unencumbered by emotion, and with a (perhaps excessive and perseverative) persistence of behavior once an objective has been set, in order to try to ensure their goals are met. Such traits may allow some psychopathic offenders to commit crimes in a planned, ruthless, and instrumental manner. It might also allow some so-called “successful psychopaths”, or white-collar psychopaths (Babiak and Babiak, 2006) to be bold and ruthless leaders in industry or politics (Lilienfeld et al., 2012a). We suggest, therefore, that consideration and measurement of these different aspects of impulsivity would be of great value to clinicians tasked with the treatment and management of psychopathic offenders.

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Table 1. *Correlations between Psychopathy and UPPS-P Scales in Previous Studies.*

Study	Sample	Measure	Negative Urgency	Positive Urgency	Lack of Planning	Lack of Perseverance
Ray et al. (2009)	92 offenders (70% men)	FD (PPI-R)	0.12		0.23	-0.19
Ray et al. (2009)	92 offenders (70% men)	SCI (PPI-R)	<b>0.70</b>		<b>0.44</b>	<b>0.44</b>
Anestis et al. (2009) <sup>a</sup>	156 students (50 men)	Primary (LPS)	0.09		<b>0.24</b>	0.11
Anestis et al. (2009)	156 students (50 men)	Secondary (LPS)	<b>0.54</b>		<b>0.50</b>	<b>0.51</b>
Miller et al. (2011) <sup>b</sup>	361 students (135 men)	F1 (SRP-III)	0.21 ( <b>0.41</b> )	<b>0.30(0.37)</b>	0.12 ( <b>0.19</b> )	-0.05 ( <b>0.3</b> )
Miller et al. (2011) <sup>b</sup>	361 students (135 men)	F2 (SRP-III)	<b>0.45 (0.58)</b>	<b>0.39 (0.57)</b>	<b>0.34 (0.56)</b>	0.18 ( <b>0.3</b> )
Berg et al. (2015)	1158 students (306 men)	FD (PPI-R)	<b>-0.11</b>	0.03	<b>0.10</b>	<b>0.09</b>
Berg et al. (2015)	1158 students (306 men)	SCI (PPI-R)	<b>0.58</b>	<b>0.61</b>	<b>0.56</b>	<b>0.34</b>
Weidacker et al. (2017a)	149 men -68 offenders and 81 students	Boldness (TriPM)	<b>-0.26</b>	0.04	-0.07	<b>-0.27</b>
Weidacker et al. (2017a)	149 men -68 offenders and 81 students	Meanness (TriPM)	<b>0.35</b>	<b>0.49</b>	<b>0.42</b>	<b>0.37</b>
Weidacker et al. (2017a)	149 men -68 offenders and 81 students	Disinhibition (TriPM)	<b>0.67</b>	<b>0.49</b>	<b>0.48</b>	<b>0.38</b>
Poythress and Hall (2011) <sup>c</sup>	Summary of studies (mixed populations)	FD (PPI-R)	0.02		0.18	0.15
Poythress and Hall (2011) <sup>c</sup>	Summary of studies (mixed populations)	SCI (PPI-R)	<b>0.43</b>		<b>0.48</b>	<b>0.47</b>
Poythress and Hall (2011) <sup>c</sup>	Summary of studies (mixed populations)	F1 (PCL-R)	0.06		0.02	0.13
Poythress and Hall (2011) <sup>c</sup>	Summary of studies (mixed populations)	F2 (PCL-R)	0.17		<b>0.28</b>	<b>0.28</b>



*Notes.* Correlations reported as statistically significant appear in bold typeface.

Abbreviations: PPI-R is the Psychopathic Personality Inventory-Revised with FD standing for the Fearless Dominance Subscale and SCI the Self-Centred Impulsivity subscale. LPS is for Levenson's Psychopathy Scales, SRP-III is for the Self-Rated Psychopathy Scale, TriPM is for the Triarchic Psychopathy Model, and PCL is for the Psychopathy Checklist.

<sup>a</sup> In the paper of Anestis et al. (2009) they refer to scales of Premeditation and Perseverance rather than Lack of Premeditation and Lack of Perseverance as they are normally scored. Hence, in order to be consistent with all the other studies, we have reversed the sign of the correlations they present for these scales.

<sup>b</sup> First figure is for the male population, and second (in brackets) is for the female population.

<sup>c</sup> These are the mean estimates (from a number of studies). Impulsivity here was not measured via the UPPS but by other instruments that approximate these dimensions of impulsivity.

Table 2.

*Descriptive Statistics of the Combined as well as the Individual Samples on Psychopathy and Impulsivity Scores*

		Total Sample ( <i>N</i> = 87)		Prison Sample ( <i>N</i> = 68)		Patient Sample ( <i>N</i> = 19)	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
PCL	Total	19.9	8.4	18.5	8.3	25.6*	7.0
	Interpersonal/Affective factor	7.1	4.1	6.4	3.9	9.7*	4.0
	Lifestyle/Antisocial factor	11.1	5.2	10.6	5.6	13.3	3.7
	Interpersonal facet	2.8	2.4	2.5	2.2	3.8	2.6
	Affective facet	4.3	2.4	3.9	2.3	5.7*	2.4
	Lifestyle facet	5.0	3.0	4.8	3.2	5.6	2.1
	Antisocial facet	6.0	3.0	5.6	3.0	7.2	2.5
UPPS-P	Negative Urgency	28.4	8.6	27.9	8.7	30.4	8.1
	Positive Urgency	24.9	8.2	24.6	8.0	26.2	9.0
	Lack of Premeditation	21.3	5.9	21.7	5.6	19.9	7.0
	Lack of Perseverance	18.9	4.8	18.9	4.8	18.8	5.1
	Sensation Seeking	30.8	8.3	31.2	8.0	29.3	9.2

*Note.* Shown are the means (*M*) and standard deviations (*SD*) in the combined sample, consisting of prisoners and students, as well as in each individual sample. Significant differences between samples are indicated by \* referring to  $p < 0.01$

Table 3

*Zero-Order Correlations between the measures of Psychopathy and Impulsivity.*

		<i>Total</i>	<i>Interpersonal/ Affective</i>	<i>Lifestyle/ Antisocial</i>	<i>Interpersonal facet</i>	<i>Affective facet</i>
UPPS-P	NU	0.10	-0.14	0.26* <sup>a</sup>	-0.23*	-0.03 <sup>b</sup>
	PU	0.18	0.02	0.28** <sup>a</sup>	-0.02	0.05
	LPm	-0.10	-0.27*	0.10 <sup>a</sup>	-0.31**	-0.18

LPs	-0.10	-0.32**	0.11 <sup>a</sup>	-0.39**	-0.16 <sup>b</sup>
SS	0.05	0.03	0.11	0.07	-0.04

*Note.* UPPS-P-related abbreviations refer to the subscales Negative Urgency (NU), Positive Urgency (PU), Lack of Premeditation (LPm), Lack of Perseverance (LPs) and Sensation Seeking (SS). Significant correlations are indicated by \* $p < 0.05$ , \*\* $p < 0.01$ . Significant differences in the magnitudes of the correlation (Fisher's  $r$ -to- $z$  transformation, Steiger, 1980) with the two factors are indicated by <sup>a</sup> $p < 0.05$ , and significant differences in the magnitudes of the correlation for the two underlying facets are indicated by <sup>b</sup> $p < 0.05$ .

Table 4.

*Outcomes of the Linear Regressions predicting UPPS-P Impulsivity based on the PCL factor scores.*

		Model R	Interpersonal/Affective factor		Lifestyle/Antisocial factor	
			beta	semi	beta	semi
UPPS-P	NU	0.40**	-0.34**	-0.30**	0.42**	0.37**
	PU	0.31*	-0.15	-0.13	0.35**	0.31**
	LPm	0.37**	-0.41**	-0.36**	0.29*	0.26*
	LPs	0.42**	-0.47**	-0.41**	0.33**	0.29*
	SS	0.11	-0.04	-0.03	0.13	0.11

*Note.* UPPS-P-related abbreviations refer to the subscales Negative Urgency (NU), Positive Urgency (PU), Lack of Premeditation (LPm), Lack of Perseverance (LPs) and Sensation Seeking (SS). Beta is the standardized coefficients derived from the linear regression predicting individual UPPS-P subscales from the two factor model of psychopathy. Semi indicates the semi-partial correlations that reflect that scales unique contribution to the total variance of the UPPS-P scale. Significance levels are indicated by \* $p < 0.05$ , \*\* $p < 0.01$

Table 5.

*Outcomes of the Linear Regressions predicting UPPS-P Impulsivity based on the PCL facet scores.*

		Model R	Interpersonal facet		Affective facet		Lifestyle facet	
			beta	semi	beta	semi	beta	semi
UPPS-P	NU	0.41**	-0.35**	-0.30**	0.04	0.03	0.25*	0.22
	PU	0.35*	-0.12	-0.11	0.02	0.01	0.30*	0.25*
	LPm	0.38*	-0.30*	-0.26*	-0.06	-0.05	0.25*	0.22
	LPs	0.47**	-0.46**	-0.40**	0.04	0.03	0.25*	0.22
	SS	0.25	0.11	0.09	-0.13	-0.11	0.19	0.16

*Note.* UPPS-P-related abbreviations refer to the subscales Negative Urgency (NU), Positive Urgency (PU), Lack of Premeditation (LPm), Lack of Perseverance (LPs) and Sensation Seeking (SS). Beta is the standardized coefficients derived from the linear regression predicting individual UPPS-P subscales from the four facet model of psychopathy. Semi indicates the semi-partial correlations that reflect that scales unique contribution to the total variance of the UPPS-P scale. Significance levels are indicated by \* $p < 0.05$ , \*\* $p < 0.01$